This appendix was created to summarize the changes made to applicable resource reports in response to issues identified by the Forest Supervisor based on the regional panel review from the ELPC objection. This summary only includes those issues that had instructions and/or suggestions and primarily directs the reader on where the issue was addressed within the appropriate report. Instruction are required to be completed by the district; suggestions are at the discretion of the office.

ELPC [1&4] The EA/draft FONSI's reliance on "age-class diversity" as the Project's primary objective is not consistent with recent ecological science and predetermines the outcome. It is unnecessary to alter age-class distribution in many stands.

Instructions:

1. Clarification and specificity regarding red pine actions for this document are required. Specifically:

a. Remove potential red pine clearcutting of 1,327 acres from this proposed action,

or

b. Include the potential red pine clearcutting of 1,327 acres and disclose the effects to resources from this action.

- At the direction of the District Ranger, the proposed red pine clearcutting of 1,327 acres has been dropped from the Fourmile Project.

Issue Number: ELPC [7] The EA/draft FONSI do not adequately analyze the Project's impacts on deer population, and in turn the growing deer population's impacts on the CNNF

Instructions: None

Suggestions:

1. Write a specialist report to consider role of deer and early successional habitat in a balanced ecological context as it relates to meeting requirements for multi-use management and diversity of age class and stand types.

- Based on Quinn et al 2006, no further analysis on deer was deemed necessary as determined by the professional judgment of the Forest and Eagle River-Florence District Wildlife Biologists.

New Information:
Curnutt, John. 2020. Overabundant White-tailed Deer Populations in the Eastern Region of the US Forest Service. 42 pp.

- Summary of existing FS knowledge and data. Not actual new information to the FS, only newly released in a condensed format for the public.

Issue Number: ELCP [8] The EA/draft FONSI do not adequately assess the Project's impact on the American marten

Instructions: Provide a summary and map that shows suitable/unsuitable habitat "post harvest".

- Addressed in the Biological Evaluation Report (BE) on p. 77-78.

Suggestions:

1) Show a map of marten habitat with proposed timber harvest prescriptions overlayed and identify the areas (19%) that will remain unsuitable as well as the vast majority of habitat that will remain suitable. This will address the written objection that Forest Service maintains that most of the logged northern hardwood stands will not become unsuitable for marten.

    - Addressed in the BE on p.77-78 see above.

2) Clarify what will make the post-harvest stands not only suitable but preferred (80% canopy closure, retained snags and increased woody debris). Requirement for some monitoring of a *critical habitat variables* at a subset of these stands (ie. canopy closure, snags and downed wood) may be necessary and would definitely help this case against the objection and possibly future objections. If created through KV can be monitored via KV.

    - Addressed in the BE on p. 75 – 76.

3) Clarify that the stands will not all be logged at once, so suitable undisturbed habitat will exist as refugia while logging is taking place.

    - Addressed in the BE on p. 76.

4) Add a short qualitative comparison with other stand types of preferred habitat available to marten in the project area such as mature northern hardwood interior, old growth areas, hemlock and cedar that is retained or released. Highlight the amount and quality of legacy habitat available compared to the ephemeral aspen habitat that self-thins, is shorter lived, and not the preferred habitat (cite WI DNR 2014, Vold and Woodford 2020 and others). Point out acres of aspen that won't be cut due to soil, slope, hydrology.

    - Addressed in the BE on p. 75.
        - About 10,470 acres (57%) of this total suitable habitat will not have any harvest treatments and will remain suitable habitat until they subside naturally or are managed in a future project; 7,182 ac. hardwood, 1,414 ac. hemlock, 360 ac. northern hardwoods/hemlock and 1,517 acres of aspen and birch (Figure 11).

    - Addressed in the BE on p. 75 -76.

5) Important to note that Table 21 referenced on p. 35 in the marten section of the EA and page 74 of the BE is actually referring to a table of habitat suitability for bald eagle. That table number should be Table 22 located on p. 73 of the BE.

    - Addressed and fixed within the BE.

6) Better to describe the model results in broad strokes…reiterating numbers is muddying the water. I had a hard time reconciling the EA calculations with the BE calculations. See text and table comparison above. It is unclear where the 19% reduced habitat comes from.

    - Addressed and fixed within the BE.

7) Perhaps provide design criteria in addition to the standards and guidelines specific for marten (ie. leave some of the large legacy aspen along the edges, create x# snags/acre in adjacent hardwoods) for additional mitigation measures.

    - Addressed in the BE on p. 76.

8) Mention cumulative effects from habitat work happening forestwide, in or adjacent to the project area that also provides some benefit for marten ((i.e. KV/Stewardship projects such as planting, release, snag creation, downed wood, wildlife brush piles etc.) every little thing helps.

    - Addressed in the BE on p. 76.
        - There are no hemlock/inclusion pine plantings, wildlife brush pile creations or releasing tree prescription plan. However, pointed out the LRMP that includes leaving DWM, snags and reserve islands.

9) Most models and papers suggest that winter habitat is the most important seasonal habitat to support self-sustaining American marten. It may be helpful to note that the suitable habitat being most impacted by the Four Mile Project is aspen/birch, which is not winter habitat, nor preferred habitat. Mixed hardwood/conifer stands appear to be the preferred habitat per WI DNR papers and others. Aspen is not considered prime/preferred habitat but it is "suitable" and marten have been detected here on Forest.

    - Addressed in the BE on p. 76.

10) Add a sentence or two about Wisconsin being at the southern edge of its range, with a goal to maintain stable numbers and not a high expectation for population expansion, may want to reference some climate change reasons as well.
    - Being in the southern distribution of the known range does not seem to be the determining factor for low population levels or failed introductions, as detailed in the below research.

Grauer et al., 2017 - American martens were previously abundant throughout their southern range in the continental United States (Dawson and Cook,2012), but have experienced numerous local extirpations (Laliberte and Ripple, 2004) due to overharvesting and habitat loss.

Grauer et al., 2019 - …the NNF population may have some connectivity with other marten populations, especially those in Michigan's Upper Peninsula, a factor which reduces the probability of extinction of this population in northern Wisconsin.

WDNR 2011 - The American marten (*Martes americana*) is a member of the weasel family and is widely distributed throughout the boreal forests of North America

Vold and Woodford, 2020- Historically, American martens (*Martes americana*; hereafter "martens") were abundant and widely-distributed in northern Wisconsin (Jackson, 1961).

Vold and Woodford, 2020 - Numerous threats to marten populations in Wisconsin have been identified including predation, competitive interactions, incidental trapping, unsuitable habitat, poor recruitment, population isolation, low prey availability, and climate change, and these threats may explain limitations to successful population recovery (Woodford and Dumyahn, 2011).

Woodford et al 2013 – failed reintroductions; male-skewed sex ratio of reintroduced martens (139 M, 45 F), lack of acclimation period during releases, and a low number of release sites (n ¼ 3).

New information:

A report of survey results from the CNNF**:**

Vold, Skyler and Jim Woodford. 2020. Evaluating The Ecology Of American Marten (*Martes Americana*) In Northeastern Wisconsin Using Non-Invasive Remote Field Cameras. Annual Report by Bureau of Natural Heritage Conservation and Wisconsin Department of Natural Resources, 46 pp.

- Yes - p.73 and 76.

p. 11 Habitat suitability and natal habitat quality are two major factors affecting the recovery of reintroduced species (Griffin et al., 1989; Miller et al., 1999; Peters et al., 2009). Habitat association for martens from our study were very similar to those from camera-trap research conducted in the Upper Peninsula of Michigan (Croose et al., 2019), where marten occupancy also increased with deciduous forest and decreased with increasing prevalence of water features.

This statement was from Vold 2020 paper that we did reference in the BE. However, those specific literature references can be included into the BE marten introduction section on page 72.

> The American marten is a small, rare weasel-like species that live in mature, dense conifer, deciduous, and mixed conifer-hardwood forest. This diversity of forest communities used strongly suggests that tree species composition is not as important as overhead cover and residual patch size (WDNR, 2011). Also critical to marten use is the presence of large snags, fallen trees, stumps and root mounds known as coarse woody material (CWM) (WDNR, 2016e). Wright (1999) found on the NMPA that both sexes selected mixed hardwood-coniferous but avoided aspen/aspen-spruce/fir, swamp conifer, and non-forested types. *Also, habitat association for martens from studies in WI (Vold,2020) and MI (Croose, 2019) showed marten occupancy increased with deciduous forest and decreased with increasing prevalence of water features.*
>
> These mature forests that covered northern Wisconsin before the 1800s provided prime habitat for American martens. However, with the arrival of European settlers, trappers, and lumbermen who settled the land, cut forests and trapped without restrictions, the species declined. As a result, trapping was banned in 1921, but by 1925 martens had been extirpated from the state (WDNR, 2011). Efforts at reestablishing an American marten population in Wisconsin began in 1953, when the Wisconsin Conservation Department imported five animals from Montana and released them on Stockton Island in Ashland County and none survived. Marten were again reintroduced by the WDNR between 1975 and 1983 on the Nicole Marten Protection Area (NMPA) and from 1987 to 2010 on the Chequamegon MPA (WDNR, 2011). Currently these marten populations exist and remain concentrated in the reintroduction areas on National Forest lands (Woodford et. al. (2005). *Major factors that can effect recovery of reintroduced species are habitat suitability and natal habitat quality (Vold, 2020).* The Nicolet population is localized on the ER/FL RD but does have habitat connection and immigration from natural dispersal of individuals from the neighboring populations in Michigan's Upper Peninsula (Grauer et at., (2019) . Research conducted in the 1980 on the Nicolet MPA indicated good evidence that the population was reproducing (100 – 150 marten) but track surveys showed 89% of the tracks were only <̲20 km from the original release site (WDNR, 2011). In 2005, Woodford et. (2005) conducted a mark-recapture study in the Nicolet MPA that provided a population estimate of 71 +30 for the area sampled. That estimate was extrapolated to 221 + 61 for the Nicolet MPA and adjacent areas.

This recent report provides evidence of stable or increasing population abundance of martens in the NNF over 5 years. P. 14

p. 73 There was a total of 72 trail camera sets across the ER/FL RD with 20 sets in the Fourmile project area and 8 within the 1-mile buffer. There was one positive observation in the project area and 4 within the buffer. The results of this study concluded that the population of martens within the NNF is stable and may be increasing (Vold, S. and J. Woodford, 2020).

Issue Number: ELCP [9] The EA ignores the distinction between occupied and unoccupied marten habitat

Instructions: Provide a summary and map that shows suitable/unsuitable habitat "post harvest".

- Addressed on p. 16 and 77 of the BE.

Suggestions:

1. Provide a map that shows suitable/unsuitable habitat "post harvest" (see suggestions in Issue 8).
   - Addressed in the BE on p. 77 – see above.

2. Provide clarification about "preferred" habitat within the suitable habitat context. Emphasize that the preferred habitat will remain suitable and be enhanced in the long term, the aspen that is most affected is not preferred. Cite Wisconsin NRD 2014 and Vold and Woodford 2020.
   - Addressed in the BE on p. 75 -76.

3. A vast majority (95%) of preferred habitat, mature northern hardwood interior forest, would remain suitable post-harvest. Not all acres would be harvested at the same time so ample habitat remains available for refugia as timber harvest takes place. (see suggestion 4 Issue 8)
   - Addressed in the BE on p. 75.

4. Because there is a 679% increase in aspen regeneration (MIS/MHIF Report) in the project area, clarification of refugia and retained preferred habitat through visuals (improved map) and summary of the map will help tell the story.

   - Addressed in the BE on p. 77.

5. Perhaps provide design criteria in addition to the standards and guidelines specific for marten (ie. leave some of the large legacy aspen along the edges, create x# snags/acre in adjacent hardwoods) for additional mitigation measures and monitor a subset of stands post-harvest to ensure it these habitat qualities remain. This will address the p.26 objection to "tailoring management recommendations to the habitat requirements of the local population".
   - Addressed in the BE on p. 76.

6. Fix or clarify the discrepancies in the percentages between the EA and BE. The acres and percentages do not match between the EA and the BE and the table noted several times in the EA is incorrect (p.35), it should be Table 22. Also, the years they refer to don't match, 2025 (EA) 2028 (BE), maybe that is why the numbers don't match?

   - Updated BE numbers. On review, the original file was found to be corrupted. These errors were corrected and resulted in updates to the analysis.

7. Provide a more qualitative interpretation of the table rather than or in addition to re-iterating the numbers, highlight the vast majority of habitat that will remain and provide refugia versus the habitat that will be lost.
    - Addressed in the BE on p.75-76.

8. Discuss the range of the marten. It is clearly documented that American marten are mostly found in the coniferous and mixed coniferous forests of Alaska, Canada and the Pacific Northwest of the US. Wisconsin is that the southernmost portion of the range on every range map, or in some cases Wisconsin is not identified at all, most sources talk about the scattered pockets in the great lakes following reintroduction.
    - Being in the southern distribution of the known range does not seem to be the determining factor for low population levels or failed introductions, as detailed in the below research.

      Grauer et al., 2017 - American martens were previously abundant throughout their southern range in the continental United States (Dawson and Cook, 2012), but have experienced numerous local extirpations (Laliberte and Ripple, 2004) due to overharvesting and habitat loss.

      Grauer et al., 2019 - …the NNF population may have some connectivity with other marten populations, especially those in Michigan's Upper Peninsula, a factor which reduces the probability of extinction of this population in northern Wisconsin.

      Vold and Woodford, 2020- Historically, American martens (*Martes americana*; hereafter "martens") were abundant and widely distributed in northern Wisconsin (Jackson, 1961).

      Vold and Woodford, 2020- Numerous threats to marten populations in Wisconsin have been identified including predation, competitive interactions, incidental trapping, unsuitable habitat, poor recruitment, population isolation, low prey availability, and climate change, and these threats may explain limitations to successful population recovery (Woodford and Dumyahn, 2011)…

      WDNR 2011 - The American marten (*Martes americana*) is a member of the weasel family and is widely distributed throughout the boreal forests of North America

      Woodford et al 2013 – failed reintroductions; male-skewed sex ratio of reintroduced martens (139 M, 45 F), lack of acclimation period during releases, and a low number of release sites (n ¼ 3).

9. Clarify what will make the post-harvest stands suitable and preferred (80% canopy closure, retained snags and increased woody debris). Requirements for some monitoring of a *critical*

habitat variables at a subset of these treated stands (ie. canopy closure, snags and downed wood) may be necessary.

- Addressed in the BE on p. 75-76.

New Information:

Vold, Skyler and Jim Woodford. 2020. Evaluating The Ecology Of American Marten (*Martes Americana*) In Northeastern Wisconsin Using Non-Invasive Remote Field Cameras. Annual Report by Bureau of Natural Heritage Conservation and Wisconsin Department of Natural Resources, 46 pp.

Yes - Addressed in the BE on p.73 and 76.

This recent report provides evidence of stable or increasing population abundance of martens in the NNF over 5 years. P. 14

Yes – Addressed in the BE on p.73.

"Extrapolating this observed density to the suitable habitat available in our study area yielded a population size of 176 – 365 individual martens, based on smaller and larger home range sizes, respectively." P. 13

This statement was from Vold 2020 paper that we did reference in the BE. It is information that is showing an estimated marten population range for the study area. We did not use that specific data about the population but chose to use another conclusion for that population that was … "*The results of this study concluded that the population of martens within the NNF is stable and may be increasing*".

p. 19-20 shows Aspen is not "preferred" habitat

- Addressed in the BE on p.76.

Issue Number: ELCP [11] The EA does not adequately evaluate impacts on marten habitat connectivity & ELCP [12] The EA does not adequately evaluate the impacts on patch size on marten

Instructions

1. A landscape level review of proximity and scale to remaining suitable habitat within the project area is warranted to address the corridor and patch size retention for American marten.

2. Provide a summary and map that shows suitable/unsuitable habitat "post harvest".

- Addressed in the BE on p. 77.

Suggestions

1. Landscape level analysis can be completed using ArcGIS to show the spatial distribution/connectivity along with ground truthing on a subset of stands to confirm that an acceptable amount of suitable/preferred habitat exists and will remain available post-harvest. Information from Vold and Woodford 2020 (and others) may be helpful in defining preferred habitat types within the broader concept of suitable habitat areas.

    - Addressed in the BE on p. 15 Within the BE section "Resource Indicators and Measures: Methodology, Spatial and Temporal Context for Effects Analysis" this explanation on how the above type of analysis would not apply to CNNF.

    - Addressed in the BE on p. 15 - Specifically for American marten, additional variables such as slope, the density of predators, the amount of tip-up mounds in the stand, a fragmentation metric, patch size and proximity to water are not included in a habitat model because no data has been offered by the two Species Viability Evaluation panels (convened during the last Forest Plan revision (2004)) nor any group (USFWS, USFS, GLIFWC) or any researcher focused on marten within Wisconsin since the Forest Plan was revised. Without credible scientific data on the species' minimum requirements or maximum tolerances, any proposed threshold (e.g., minimum patch size) criteria would be poorly linked to the biology of these species on the CNNF, likely leading to erroneous environmental effects determinations. Furthermore, any attempt to address this lack of data with educated guesses by the Forest Service would jeopardize any potential gain in model accuracy. Particularly with the variables of habitat connectivity and patch size, the Forest does not address them in this project because the entire district is considered one patch of marten habitat (Figure 1). This large extent of available suitable habitat across the district does not lend itself to multiple patches to be managed, but rather one patch. Given this habitat abundance, connectivity is also readily available to allow marten individuals to easily move away from disturbance (i.e., timber and road management activities associated with this project). As such, the marten effects model, particularly when addressing

cumulative effects, incorporates areas larger than the project area (and its 1-mile buffer) to determine whether connectivity is affected by the proposed project.

2. A current literature review should be conducted for patch size requirements in case new information is available because if it exists, this objectioner will most likely find it. This can help to update the Process Paper on the Habitat Models for Affects Analysis paper.

    - See above #1 response.

3. See Shirk Et al. 2012 regarding Scale dependency of marten habitat relations; may help justify not using The Northwest Howell project fragmentation and patch size analysis. Especially if the spatial distribution of remaining quality habitat is clarified with a map and summary.

    - The Shirk paper is related to research on determining occurrence of marten in Idaho which has different habitat and marten population dynamics then those in northern Wisconsin. We have referenced in the Fourmile BE marten research that occurred on the Eagle River /Florence Ranger District by Grauer and Woodford (2019) and Vold and Woodford (2020) that addressed the presence absence of marten on the District.

    - Also see above #1 response.

4. Include a map of suitable habitat and proposed timber sale (see specific suggestions for Issue 8).

    - Addressed in the BE on p. 77.

5. Clarify that the stands will not all be logged at once, so suitable undisturbed habitat will exist as refugia while logging is taking place.
    - Addressed in the BE on p. 76.

6. Clarify what will make the post-harvest stands suitable (80% canopy closure, retained snags and increased woody debris). Requirements for some monitoring of a *critical habitat variables* at a subset of proposed stands (ie. canopy closure, snags and downed wood) may be necessary.

    - Addressed in the BE on p. 75-76.

New Information:

Vold, Skyler and Jim Woodford. 2020. Evaluating the Ecology Of American Marten (*Martes Americana*) In Northeastern Wisconsin Using Non-Invasive Remote Field Cameras. Annual Report by Bureau of Natural Heritage Conservation and Wisconsin Department of Natural Resources, 46 pp.

- Yes - Addressed in the BE on p.73 and 76.

This recent report provides evidence of stable or increasing population abundance of martens in the NNF over 5 years. P. 14

- Yes – Addressed in the BE on p.73.

"Extrapolating this observed density to the suitable habitat available in our study area yielded a population size of 176 – 365 individual martens, based on smaller and larger home range sizes, respectively."

- Did not use, same reason as stated above.

p. 19-20 shows Aspen is not "preferred" habitat

- Addressed in the BE on p.76.

Issue Number: ELPC [14] The EA/draft FONSI do not adequately assess the Project's impact on the wood turtle

Instructions:

1. As the seasonal restrictions are "recommended", it would be valid to change the determination to MII.

    - Addressed in the BE on p. 66 Cumulative Effects:

    Because much of the impact to turtles will be mitigated and past, present, and reasonably foreseeable activities are limited in the local in nature effects analysis area of turtles, minimal to no cumulative effects would be present.

    Determination:

    No Impact. There would be no effects from the management activities within the 300-meter buffer around rivers with known wood turtle activities due to mitigation measures to avoid effects to wood turtles. Because there are no negative direct and indirect effects, no cumulative effects exist to be analyzed and as a result no further analysis is warranted. (WDNR, 2020)

2. Elaborate on known turtle detections on the forest

    - Addressed in the BE on p. 63.

3. Improve the map and suitable/unsuitable stream descriptions to be more transparent on timber harvest in 300 m buffer.

    - Addressed in the BE on p. 64.

Suggestions

1. The evidence for presence of turtles is not well presented, it is necessary to elaborate on results of surveys or riparian habitat evaluations by Bob Hay, FS incidental, and NHI. A sentence covering the detail about the stream conditions of all streams (ie. 5 streams suitable based on flow and stream channel conditions further confirmed by Bob Hay (report yrs), xx streams were considered not suitable due to lack of proper conditions.) Results about detections from Bob Hay (ie. reported xx turtles over xx years mainly "where" on the forest), incidental (ie. typically 3-5 turtles per year are observed by FS staff more in the xx RD), and NHI also shows (ie. scattered detections mostly in the XX RD) would show knowledge of the population of wood turtles on the Forest. Results from Bob Hay reports (or any written documentation) would invalidate the objection that "The Forest Service has conducted no monitoring of wood turtle on the CNNF or in the project area and justifies this shortfall by claiming monitoring is too difficult."

    - Addressed in the BE on p. 63 see above Instructions #2.

2. There is a map in the BE (p. 62) showing five streams with suitable overwintering habitat This map needs improvement (legend), also include streams not considered suitable and overlay treatment types/areas identified within the 300 m buffer of all streams. This will address the objection about the unknown acres of

timber harvest within 300 m of other streams not deemed suitable. If there is a no entry riparian buffer due to soils, hydrology, slope, it would be helpful to visualize on the map or acknowledge it in the analysis as well.

- Addressed in the BE on p. 64 See above Instructions #3.

Issue Number: ELPC [16] The EA/draft FONSI do not address the scientific literature that would suggest that the Project may well have a greater negative impact on water resources than the EA/FONI acknowledge. Clearcutting in the Riparian Management Zone Will Impact Water Quality.

Instructions:

1. Add the "Management Requirements Design Features" column to Appendix A.

    - Updates to the Fourmile EA/draft FONSI Appendix A were made.

2. Add streams where aspen will not be regenerated within 300 feet of streams if this is not included in "Management Requirements Design Features."

    - Addressed in the Water Resource Report (aka "Aquatics Report") on page 31.

Issue Number: ELPC [17] The cumulative impacts and indirect impacts analyses in the EA/draft FONSI are insufficient.

Instructions:

1. Provide a cumulative effects summary to clarify the conclusions provided in the EA.
    - Has been updated in Chapter 3 of the EA.